REMARKS

Applicants have amended the claims in order to more precisely define the scope of the presently claimed invention, taking into consideration the outstanding Official Action. Specifically, claim 1 has been amended to recite "a group consisting of at least one of..." as suggested by the Examiner in the outstanding Official Action. In light of this amendment, Applicants respectfully request that the objection to claim 1 as being unclear be withdrawn.

The rejection of claims 1-3 and 6-9 under 35 U.S.C. §103(a) as being unpatentable over Kawasaki in view of Wahl has been carefully considered but is most respectfully traversed in light of the amendments to the claims and the following comments.

Applicants wish to direct the Examiner's attention to the basic requirements of a prima facie case of obviousness as set forth in the MPEP § 2143. This section states that to establish a prima facie case of obviousness, three basic criteria first must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine the reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations.

The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, not in applicant's disclosure. In re Vaeck, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991).

Section 2143.03 states that all claim limitations must be taught or suggested by the prior art. In re Royka, 490 F.2d 981, 180 USPQ 580 (CCPA 1974). "All words in a claim must be considered in judging the patentability of that claim against the prior art." In re Wilson, 424 F.2d 1382, 1385, 165 USPQ 494, 496 (CCPA 1970). If an independent claim is nonobvious under 35 U.S.C. 103, then any claim depending therefrom is nonobvious. In re Fine, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988).

Applicants also most respectfully direct the Examiner's attention to MPEP § 2144.08 (page 2100-114) wherein it is stated that Office personnel should consider all rebuttal argument and evidence presented by applicant and the citation of In re Soni for error in not considering evidence presented in the specification.

The Official Action urges that Kawasaki discloses a compound semiconductor material for an active layer of a thin film transistor device, comprising a doped group II-VI compound, the dopant being selected from group IIIA elements. Applicants specifically traverse this statement.

Kawasaki discloses a transistor comprising a channel layer 11 formed of a transparent semiconductor, such as zinc oxide and zinc magnesium oxide (see, e.g., paragraphs [0025], [0026] and [0028]). The transistor disclosed in Kawasaki also comprises a source 12, a drain 13, a gate 14 and a gate insulating layer 15, all of which may be formed of a transparent electrode. The transparent electrode may be formed of a transparent conductive material such as zinc oxide doped with group III elements (see, e.g., paragraphs [0025], [0026], [0029]).

As one of ordinary skill in the art of thin film transistors would understand, the channel layer of Kawasaki most closely resembles the active layer of the present invention. Similarly, one of ordinary skill in the art would understand that a source, drain, gate and gate insulating layer would not be referred to as an active layer. Therefore, the portion of Kawasaki that could be interpreted as disclosing an active layer for purposes of supporting a prior art rejection is only that portion which discloses a channel layer (i.e., paragraph [0028]).

Therefore, as an initial matter, the Official Action has failed to properly show where in Kawasaki an active layer is disclosed because the portion of Kawasaki relied upon in the Official Action refers to the source, drain, gate and gate insulating layer rather than the channel layer. In any event, the portion of Kawasaki that discloses a channel layer still does not disclose an active layer as claimed in the present application. The material used for the channel layer disclosed in Kawasaki is zinc oxide, zinc magnesium oxide, zinc cadmium oxide, cadmium oxide or the like. Kawasaki also

discloses that the material may be doped with n and p-type impurities. However, there is no disclosure of a compound semiconductor material for forming an active layer of a thin film transistor device that comprises a group II-VI compound doped with a dopant selected from a group consisting of at least one of alkaline-earth metals, group IIIA elements, group IVA elements, group VA elements, group VIA elements and transitional metals as claimed in the present application. Kawasaki makes no disclosure of doping the group II-VI compound with a dopant of the type recited in the claims.

Further, it is clear that Wahl does not remedy this deficiency of Kawasaki. Wahl is directed to a lithium nitride doped with hydrogen. No portion of Wahl can be combined with Kawasaki to disclose or suggest a group II-VI compound doped with of at least one of alkaline-earth metals, group IIIA elements, group IVA elements, group VA elements, group VIA elements and transitional metals. Therefore, Applicants respectfully assert that a prima facie case of obviousness has not been established as required by MPEP §2143. Accordingly, Applicants respectfully request that this rejection be withdrawn.

The §103(a) rejection of claims 1-3 and 6-9 over Kawasaki in view of Wahl is deficient in other respects, as well. The Official Action acknowledges that Kawasaki fails to disclose a group II-VI compound doped with a dopant ranging from 0.1 to 30 mole% as claimed in the present application. The Official Action urges that Wahl discloses a compound doped with a dopant ranging from 0.2 to 8 mole% and assets that it would have been obvious to combine the teaching of Wahl with the invention of Kawasaki in order to increase the conductivity of the active layer of a thing film transistor. Applicants specifically traverse this statement.

First, as discussed in detail above, neither Wahl nor Kawasaki disclose an active layer of a thin film transistor comprising a group II-VI compound doped with at least one of alkaline-earth metals, group IIIA elements, group IVA elements, group VA elements, group VIA elements and transitional metals.

Further, the Official Action fails to mention that Wahl teaches a lithium nitride compound and not a group II-VI compound as claimed in the present application and

discloses a dopant of hydrogen and not a dopant of alkaline-earth metals, group IIIA elements, group IVA elements, group VA elements, group VIA elements or transitional metals as claimed in the present application. Thus, the Official Action is urging that one of ordinary skill in the art would have found it obvious by looking at the range of **hydrogen** dopant in **lithium nitride** as disclosed in Wahl to modify the range of **alkaline-earth metal**, **group IIIA element**, **group IVA element**, **group VA element**, **group VIA element**, or **transitional metal** dopant in a **group II-VI compound**. This clearly cannot be correct. Wahl discloses a lithium nitride, which is not a semiconductor material, let alone a group II-VI compound, and discloses a hydrogen dopant, which is not an alkaline-earth metal, a group IIIA element, a group IVA element, a group VA element, a group VIA element or a transitional metals. Thus, while Wahl discloses a specific dopant doped at a specific range into a specific compound, the Official Action would have it that Wahl discloses any one element may be doped into any compound at the specific range disclosed therein and therefore modifying Kawasaki in such a way would be obvious to one of ordinary skill in the art. Applicants respectfully assert that the Official Action is improperly and impermissibly stretching the teaching of Wahl to modify the invention of Kawasaki. Because a prima facie case of obviousness has clearly not been established, Applicants respectfully request that this rejection be withdrawn.

Applicants also note that the doping reaction disclosed in Wahl is achieved when the reaction is performed at a temperature of about 140°C to 180°C and a pressure above 250 mmHg. In other words, the doping reaction occurs through heating at a high temperature and high pressure. However, the doping reaction of the compound semiconductor claimed in the present application is achieved through solution process. Therefore, the compound semiconductor material of the present invention would be difficult to synthesize using the doping process disclosed in Wahl. Accordingly, Applicants respectfully request that this rejection be withdrawn.

As for the rejection of claims 2, 3 and 6-9 under 35 U.S.C. §103(a) over Kawasaki in view of Wahl, Applicants note that the references, either standing alone or

when combined, fail to disclose or suggest all of the elements of the independent base claim from which each of claims 2, 3, and 6-9 depend. Therefore, Applicants respectfully assert that a prima facie case of obviousness have not been established with respect to the claims and ask that the rejection be withdrawn.

The rejection of claim 4 under 35 U.S.C. §103(a) as being unpatentable over Kawasaki in view of Wahl as applied to claim 1 and further in view of Tanaka has been carefully considered but is most respectfully traversed in light of the amendments to the claims and the following comments.

As discussed in detail above, Kawasaki and Wahl, either standing alone or when combined, fail to disclose or suggest every element of the independent base claim 1 from which claim 4 depends. Tanaka fails to remedy those deficiencies identified above. Tanaka discloses a method for manufacturing a single crystal quartz thin film (silicon compound) having a thickness of 5 nm to 50μm through a sol-gel process and peeling process. The sol-gel process disclosed therein is used to form a precursor solution of a silicon compound. Therefore, Tanaka clearly fails to disclose a group II-VI compound doped with of at least one of alkaline-earth metals, group IIIA elements, group IVA elements, group VA elements, group VIA elements and transitional metals as claimed in the present application. Because Tanaka cannot remedy the deficiencies identified above with respect to Kawasaki and Wahl, Applicants respectfully request that this rejection be withdrawn.

Applicants also note that the present application claims a compound semiconductor material for forming an active layer of a thin film transistor device wherein a precursor solution of the compound semiconductor material is prepared by sol-gel process. Tanaka discloses a method of manufacturing a single crystal quartz thin film (silicon compound) having a thickness of 5 nm to 50μm through a sol-gel process and a peeling process. Therefore, the technique claimed in the present application is different from that disclosed in Tanaka.

Finally, Applicants note that the silicon compound disclosed in Tanaka is an insulating material and not a semiconductor material. The silicon material is not able

to serve as an active layer of a thin film transistor. Therefore, the disclosure of Tankaka is different from that presently claimed invention.

The rejection of claim 5 under 35 U.S.C. §103(a) as being unpatentable over Kawasaki in view of Wahl as applied to claim 1 and further in view of Baek has been carefully considered but is most respectfully traversed in light of the amendments to the claims and the following comments.

As discussed in detail above, Kawasaki and Wahl, either standing alone or when combined, fail to disclose or suggest every element of the independent base claim 1 from which claim 5 depends. Baek fails to remedy those deficiencies identified above. Baek discloses a method of forming a resist pattern through micro contact printing. However, Baek does not involve the group II-VI compound semiconductor material or dopants selected from the group consisting of alkaline-earth metals, group IIIA elements, group IVA elements, group VA elements, group VIA elements and transitional metals. Because Baek cannot remedy the deficiencies identified above with respect to Kawasaki and Wahl, Applicants respectfully request that this rejection be withdrawn.

The rejection of claim 8 under 35 U.S.C. §103(a) as being unpatentable over Kawasaki in view of Wahl as applied to claim 1 and further in view of Bai has been carefully considered but is most respectfully traversed in light of the amendments to the claims and the following comments.

As discussed in detail above, Kawasaki and Wahl, either standing alone or when combined, fail to disclose or suggest every element of the independent base claim 1 from which claim 8 depends. Bai fails to remedy those deficiencies identified above. Bai discloses a cyano-functional polymer with relatively high dielectric constants suitable for use in electric devices. However, Bai does not disclose compound semiconductor material for forming an active layer of a thin film transistor device as claimed in the claim 1. Because Bai cannot remedy the deficiencies identified above with respect to Kawasaki and Wahl, Applicants respectfully request that this rejection be withdrawn.

In view of the above comments and further amendments to the claims, favorable reconsideration and allowance of all of the claims now present in the application are most respectfully requested.

Respectfully submitted,

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